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ABSTRACT

One of a series of teaching units designed to introduce secondary students to the Canadian economy, this handbook contains instructional materials on unemployment and inflation. Material is divided into nine sections. Section 1 covers historical trends in unemployment and inflation. Section 2 examines four types of unemployment: frictional, structural, deficient demand, and search. Section 3 presents methods of measuring and defining unemployment. Section 4 deals with measuring the unemployment rate. Sections 5 and 6 focus on types and causes of inflation and examine supply side economic theories, the demand-pull theory, and supply and demand theories. Section 7 outlines methods of measuring inflation. The final two sections discuss myths and misconceptions about inflation, including the effect of inflation on borrowers and the effect of inflation on the standard of living. Each section follows a uniform format: a brief introductory reading on a specific issue or topic is followed by one or more activities. A section summary and answer key are provided where applicable. (LP)

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# UNEMPLOYMENT AND INFLATION IN CANADA

*A TEACHING UNIT*

*BY GWILLYM J. ALLEN*

*Series Editor: TED STAUNTON*

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# *PREFACE*

Established in 1970 with individual, corporate and governmental support at both provincial and federal levels, the Canada Studies Foundation, currently funded by the Department of the Secretary of State, has actively promoted mutual understanding among the diversity of peoples in Canada. With the conviction that schools can and must provide a knowledge base to help young Canadians become more informed and more active citizens, the Foundation has supported teachers across Canada in the development of books and other learning materials that assist students in one part of Canada to learn more about their fellow Canadians in other parts of our vast country.

This teaching unit is one of a series devoted to 'Understanding Canada's Economy', which has been developed at Trinity College School, Port Hope, Ontario. This Canada Studies Foundation resource centre has been developing curriculum materials in Economics since 1979. The present series contains four secondary school level teaching units. They are *Money, The Banking System and Monetary Policy in Canada, Unemployment and Inflation in Canada, Canada in the International Economy and Women in the Canadian Economy.* The format is a continuation of the activity approach used in the inaugural C.S.F.T.C.S. publication in 1979, *Canada's Economy. An Activity Approach* (Jennings, William E. *et al.*, O.I.S.E. Press, 1981). The units are meant to introduce students to various topics in the Canadian economy through various types of activities. It is expected that the activities will generate considerable classroom discussion and debate and thus lead to the development of further understanding.

Teachers may wish to use these units to augment existing materials or as self-contained units of two or three weeks in duration. The language level and presentation of concepts has been written for a senior audience, particularly economics students.

The author of this teaching unit is currently in the economics department at Trent University, Peterborough.

# 1 SECTION *Historical trends*

## a INTRODUCTION

In September of 1982, the Canadian economy was experiencing the worst recession since the Great Depression of the 1930's. The unemployment rate was 12.2%, which meant 12.2 per cent of the total labour force who were willing to work could not find a job. The rate at which prices, on average, were increasing, the rate of inflation, was around 10.2%. A good or service in Canada costing one dollar in September of 1982 could be expected to cost one dollar and ten cents within a year.

It is, however, difficult to judge the current performance of the economy without knowing how it compares with performances in the past. In order to make these comparisons, we will have to examine the historical trends and movements of the unemployment and inflation rates. This will allow us to better understand and answer some of the following questions.

a) Is the recent experience of high unemployment and high inflation unique in Canada's economic history?

b) Do the rates of unemployment and inflation exhibit any predictable or cyclical trends or patterns?

c) If there are such patterns, are periods of unusually high unemployment, as we are experiencing today, traditionally followed by large economic expansions or are mild recovery periods usually the norm?

d) Historically, how long do periods of high unemployment or periods of high inflation usually last?

b UNEMPLOYMENT

## 1 *Activity*

Using the data given in Chart 1 plot the rates of unemployment over the past 60 years. Are there any identifiable patterns or trends in how this rate has performed? When did the unemployment rate peak and when did it reach its lowest level during this period?

As you can see from your graph, the rate of unemployment has fluctuated over a wide range during the past three decades. It has been as high as 19.3% in 1933 and has fallen as low as 1.4% in 1944.

At the beginning of this period, the unemployment rate was very low but it rose to its all-time high by 1933. It then continuously declined until 1944. For the next ten years until 1954, the rate remained virtually unchanged around the 2% level. But at the beginning of 1953, it exhibited an upward trend which continued until late 1960 or early 1961. At that time, it again fell for about five years. But in 1966, the unemployment rate began to increase and it has continued to do so until today.

There is some disagreement within the economic profession as to whether or not the unemployment rate exhibits any identifiable or distinctive pattern.

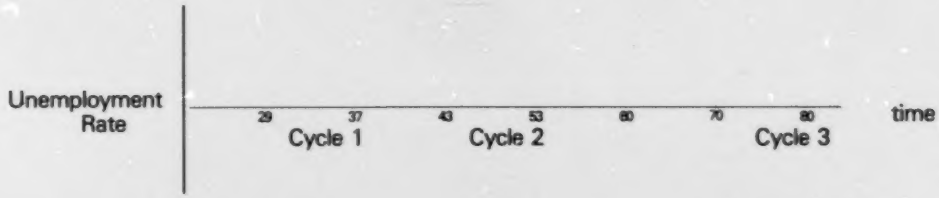
Some economists would argue the level of unemployment displayed three long cycles over the last three decades. The first began in the trough in 1928 and peaked in 1933. The second began at the peak in 1933 and dropped to a prolonged constant trough during 1943-54 and then peaked in 1960. The third cycle began at that time, dipped into a trough by 1966 and then began to rise and was just reaching its peak in the early 1980's.

Other economists argue that it is stretching the imagination to brand these as actual cycles. The movements and trends are not well enough defined as distinctive and predictable patterns. This not withstanding, there does seem to be a recognizable cycle pattern of the unemployment rate over this 60 year period, although it is rather a weak one.

C INFLATION

## 2 *Activity*

Sketch generally the trend pattern of the level of unemployment over the past three decades and identify the three general long cycles.




## 3 *Activity*

What major events in Canadian history might help explain this cyclical pattern of unemployment?

## 4 *Activity*

Using the data (given from the Bank of Canada Review), plot the rates of inflation over the past 60 years. Does the inflation rate exhibit any identifiable patterns or trends? When did inflation peak and when did it reach it lowest level in this period?

As you can see, inflation rates, as measured by the consumer price index, have not been quite as volatile as unemployment. In fact, with the exception of the 1930's the inflation rate has demonstrated a continuously upward trend since the 1920's. Since that time, prices have not risen on only three occasions, 1930-1934, 1939 and 1953, having increased every other year during the last sixty.

These inflation rates do not demonstrate any clear or distinct regular pattern, however weak, except for a clear upward trend. During this upward movement the rate exhibited periodic outbursts of sudden price increases in 1934, 1940-42, 1947-48 and 1951.

d UNEMPLOYMENT AND INFLATION

## 5 *Activity*

Are these outbursts of inflation associated with any other major events in Canadian history? Do you think there could be a direct cause-and-effect relationship between these events and the rate of inflation? Explain.

## 6 *Activity*

Take the graphs you constructed in Activities 1 and 2 and put them together as the same graph. Compare the rates of unemployment with the rates of inflation during the three long cycles exhibited by the unemployment rate. Is there a positive or negative correlation between the rate of unemployment and the rate of inflation?

The comparison of the two graphs should demonstrate that there does appear to be a weak negative correlation between the rate of unemployment and the rate of price inflation. Or at least this seems to be true until the mid 1960's. In the early 1920's, when unemployment was between five and six per cent which was relatively high for that time in history, the inflation rate was negative. When unemployment fell to the three per cent range in the late 1920's inflation became positive. During the next cycle, the relationship is even more striking. The high unemployment rates of the depression were accompanied by low and, at times negative rates of inflation and as the economy improved through the 1940's inflation again began to increase. Finally, as unemployment increased in the 1950's, inflation again was generally low. Since the mid-1960's however, this inverse relationship between the rate of unemployment and the rate of inflation seems to have disappeared.

These historical trends and what appears to be a weak inverse relationship between unemployment and inflation led economists to believe there existed a trade-off between the two. They suggested that government policy makers had a choice between low unemployment but high rates of inflation or high unemployment and low inflation rates. Most recent experience, however, suggests this trade-off no longer exists.

## SUMMARY

Examination of the historical trends of unemployment and inflation suggests the following general observations:

The unemployment rates seem to exhibit a weak cyclical pattern conforming to three general cycles.

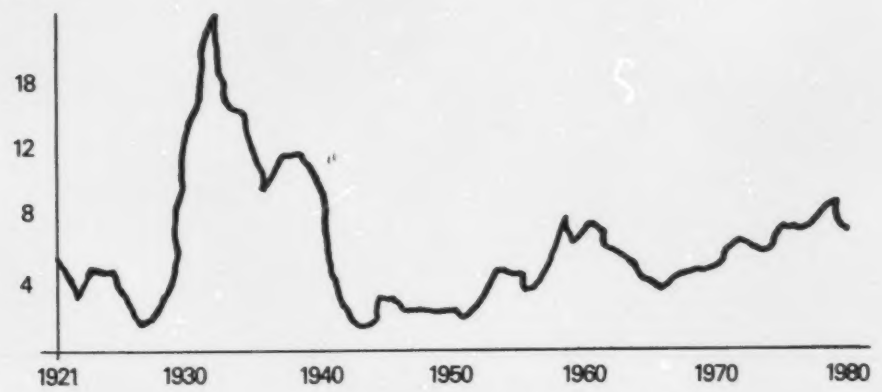
The rate of inflation exhibits no distinctive cyclical behaviour that could be described as a predictable pattern.

There seems to have been a weak inverse relationship between the rate of unemployment and the rate of inflation. This led economists to believe there was a trade-off between the two. However, this no longer seems to be the case.

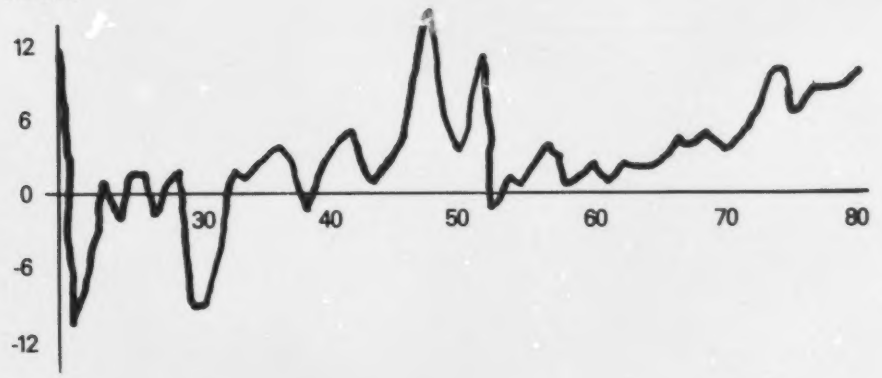
## ANSWERS

ANSWERS TO ACTIVITIES 1,4,6.

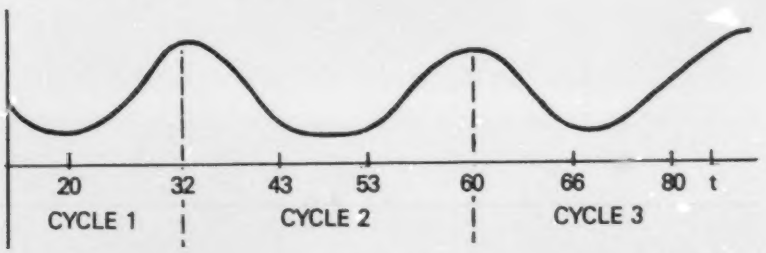
UNEMPLOYMENT RATE




INFLATION RATE




ANSWER TO ACTIVITY 2






These diagrams for reference only; based on information obtained from Bank of Canada Review (various issues)

CHART 1

C.P.I.

| Year | Inflation/p.a. | Unemployment | Year | Inflation | Unemployment |
|---|---|---|---|---|---|
| 1920 | 15.8 | | 1951 | 10.6 | 1.5 |
| 1921 | -12 | 5.8 | 1952 | 2.4 | 2.0 |
| 1922 | -8.4 | 4.4 | 1953 | 0.9 | 3.0 |
| 1923 | 0.2 | 3.2 | 1954 | 0.6 | 4.6 |
| 1924 | -1.8 | 4.5 | 1955 | 1.5 | 4.4 |
| 1925 | 0.9 | 4.4 | 1956 | 1.5 | 3.4 |
| 1926 | 1.1 | 3.0 | 1957 | 3.2 | 4.6 |
| 1927 | -1.8 | 1.8 | 1958 | 2.7 | 7.0 |
| 1928 | 0.5 | 1.7 | 1959 | 1.0 | 6.0 |
| 1929 | 1.2 | 2.9 | 1960 | 1.4 | 7.0 |
| 1930 | -0.7 | 9.1 | 1961 | 0.9 | 7.1 |
| 1931 | -9.6 | 11.6 | 1962 | 1.1 | 5.9 |
| 1932 | -9.1 | 17.6 | 1963 | 1.8 | 5.5 |
| 1933 | -4.7 | 19.3 | 1964 | 1.8 | 4.7 |
| 1934 | 1.5 | 14.5 | 1965 | 2.8 | 3.9 |
| 1935 | 0.6 | 14.2 | 1966 | 3.7 | 3.4 |
| 1936 | 1.7 | 12.8 | 1967 | 3.6 | 3.8 |
| 1937 | 3.4 | 9.1 | 1968 | 4.0 | 4.5 |
| 1938 | 1.1 | 11.4 | 1969 | 4.5 | 4.4 |
| 1939 | -0.8 | 11.4 | 1970 | 3.3 | 5.7 |
| 1940 | 4.1 | 9.2 | 1971 | 2.9 | 6.2 |
| 1941 | 5.8 | 4.4 | 1972 | 4.8 | 6.2 |
| 1942 | 4.7 | 3.0 | 1973 | 7.5 | 5.5 |
| 1943 | 1.9 | 1.7 | 1974 | 10.9 | 5.3 |
| 1944 | 0.5 | 1.4 | 1975 | 10.8 | 6.9 |
| 1945 | 0.5 | 1.6 | 1976 | 7.5 | 7.1 |
| 1946 | 3.4 | 2.6 | 1977 | 8.0 | 8.1 |
| 1947 | 7.3 | 1.9 | 1978 | 9.0 | 8.4 |
| 1948 | 14.2 | 1.6 | 1979 | 9.1 | 7.5 |
| 1949 | 3.2 | 2.0 | 1980 | 10.1 | 7.5 |
| 1950 | 2.9 | 2.0 | 1981 | | |
| | | | 1982 | | |

Obtained from
Bank of Canada Review

# 2 SECTION *Types and causes of unemployment*

## a INTRODUCTION

Most Canadians associate an increase in the unemployment rate with a decline in the level of economic activity, a recession. They also expect whenever such an increase in the unemployment rate occurs, it is the responsibility of the federal government to take positive action to try to rectify the unemployment problem by stimulating the economy.

Although recession is a major cause of unemployment, to presume this is the only cause of unemployment is much too limited. The country may experience increased unemployment without being in recession. As you would expect, government policies that are introduced to solve unemployment caused by recession may be totally inappropriate to solve unemployment caused by other reasons. This is simply because an effective solution to any problem should be directed at the primary cause of the problem. To aid authorities in choosing the correct policy action to fit the particular circumstances, different types of unemployment have been identified by what is thought to be its primary cause.

### 1 *Activity*

Can you think of other reasons why there may be an increase in the unemployment rate?

## b FRICTIONAL UNEMPLOYMENT

At any moment in time, there will be a proportion of the labour force made up of workers who are between jobs. These individuals voluntarily leave their jobs to look for other, usually better, alternative employment opportunities. This results in a pool of unemployed workers moving between jobs and as there will always be workers who become dissatisfied with their jobs or are offered more lucrative and attractive positions, this pool is an avoidable fact of life. It is thought that frictional unemployment constitutes approximately 3 to 4 per cent of the labour force. When you hear politicians, usually incumbent ones, refer to the fact that the full level of national income or GNP has an unemployment rate of 3 or 4 percent, it is this frictional unemployment component they are talking about. The point to remember is that individuals experiencing frictional unemployment have voluntarily chosen to be without work for a short period of time because they believe this will ultimately improve their economic lot in life. Consequently, there is little the government can or indeed should do to reduce the level of frictional unemployment in the economy.

## C STRUCTURAL UNEMPLOYMENT

As you know, when the demand for an industry's output declines, this will eventually result in lay-offs and increased unemployment. When the decline in demand is isolated to a particular industry or perhaps a geographical region and is not experienced by the rest of the economy, the resulting unemployment that may arise is referred to as being structural.

In these situations, total demand in the economy is usually left unchanged or may even increase, but the components of the total change for some reason. The easiest way to think of this, is to assume that the total economy is like an individual who is going to demand one hundred dollars worth of goods and services. This is the total demand and it will be spent on a variety of products. Let's suppose he only buys two goods, school books and mystery stories, and that he traditionally spends $50 on each. Total demand is divided evenly between the two goods. The producers of school books and the producers of mystery stories must hire just enough labour to produce fifty dollars each of their perspective products. But as this individual grows older and leaves school he will not need to buy as many school books and he will have more free time to read mysteries. Suppose the individual's total demand of one hundred dollars for books will remain the same but he now wants to spend more on mystery stories than school books. The producer of school books will not need as many workers because he will need to produce less than fifty dollars worth of text books while the producer of mysteries will need to produce more than fifty dollars worth of books and therefore require more labour. This simple economy has undergone a structural change that has altered the composition of the total demand. Now as long as labour can move quickly and freely from being laid off in the school-book plant to being re-hired in the mystery-story plant, there will be little or no change in total employment. But in most cases, this movement is not quick and easy, requiring considerable re-adjustments involving retraining of labour and retooling of machinery. The result is a situation where jobs are available but labour is, for some reason, restricted from immediately being hired to fill them. When this occurs, the economy is said to suffer from structural unemployment.

A common cause of structural unemployment, especially in Canada, is regional or locational factors. In the late 1970's, and early 1980's, there were many jobs in Alberta and the West as the demand for domestic energy increased. The problem faced by Canada was that most of the labour force was located in Ontario, in the east, and as labour could not (or would not) move, structural unemployment arose in Ontario.

## 2 *Activity*

i) Explain how the introduction of computers can contribute to the problem of unemployment.

ii) Will a government policy of stimulating the economy solve the unemployment caused by the popularity of computers.?

iii) What policy would you suggest to solve this type of unemployment?

## d DEFICIENT-DEMAND UNEMPLOYMENT

This is thought to be the most common cause of unemployment. What it means is the total amount of goods and services individuals in the economy are willing to purchase is insufficient to keep the labour force employed.

To illustrate this further, consider the previous examples of an economy that produces only textbooks and mystery books. Now if all labour, when gainfully employed, produced just $100 worth of output, there would be no unemployment problem. The total number of books individuals are willing to buy is just enough to keep everyone busy working to supply that number.

But if for some reason, the total amount of reading material demanded fell below a value of $100, to say $75, it would be unnecessary to employ the same number of workers. From the standpoint of the manufacturers, if individuals are only willing to purchase $75 worth of your output, it makes little sense to continue to produce $100 worth. As producers reduce output, they will require fewer workers resulting in an increase in the number of lay-offs and unemployment.

Therefore deficient-demand unemployment is the type of unemployment associated with recessions and economic downturns.

## e SEARCH UNEMPLOYMENT

A type of unemployment that is rather difficult to define and identify is search unemployment. This refers to people who prolong their stay in the ranks of the unemployed in order to search for a better job. If they find an acceptable position rather quickly, then it is difficult to distinguish them from being frictionally unemployed. On the other hand, if a prolonged and extended search reveals there are no jobs of the type they are looking for, those in search unemployment become structurally unemployed as they will now have to be retrained for the jobs that are available.

## 3 *Activity*

How will increasing the unemployment benefits to one hundred per cent replacement of salary affect search unemployment?

# *Types and causes of unemployment*

## SUMMARY

The appropriate policy action authorities should adopt to solve the problem of unemployment will depend on the type of unemployment that exists. Economists identify four main types of unemployment. Frictional unemployment which is unavoidable; structural unemployment caused by a change in the composition of total demand; deficient-demand unemployment, due to a reduction in total demand across the economy, or a recession; and search unemployment, resulting from workers spending extended periods searching out better or potentially better jobs.

ANSWERS

# *Activity 1:*

The purpose of this activity is just to encourage the student to think about unemployment which is due to some reason other than recession.

— The answers will probably be in real world terms, which, by the end of the class can be placed in the more traditional categories discussed.

# *Activity 2*

i) Popularity of computers will or has encouraged firms to substitute machines for men and women; the replacement of secretaries with word or data processors is a case in point. Any of those unemployed will have to be retrained to be able to work in the "computer age" and therefore would be considered as structurally unemployed.

ii) A government policy which stimulates the economy will have little effect on this type of unemployment. As the computers, etc. will still be just as popular, this policy will probably increase the number of jobs for computer trained experts. But the problem is, there are not enough of these experts without the government policy.

iii) A better policy for the government would be to encourage re-training programs.

# *Activity 3*

Although the major reason for increasing unemployment insurance benefits is to ease the plight of the unemployed during times of recession, it may have other effects. It may encourage individuals to prolong their stay in the ranks of the unemployed searching for a better job, or encourage others to engage in the search.

# 3 SECTION

# *Measuring and defining unemployment correctly*

## a INTRODUCTION

Once a month, Statistics Canada releases Canada's unemployment rates. On October 8, 1982, it was reported that 12.2% of the Canadian labour force was unemployed. As you saw in the first section, in the past three decades, Canada's unemployment rate has fluctuated over a wide range of values. It is difficult not to associate the unemployment rate as some measure of hardship or as an index of economic performance. Because such associations are impossible to avoid, it is important that you know exactly what the Canadian unemployment rate measures and how it is calculated.

## b DEFINITION OF UNEMPLOYMENT

As you now know, unemployment may arise for a number of reasons. So if we are going to associate the reported unemployment rate with economic hardship or performance, we must first identify what type or unemployment this reported rate is measuring. To justify such an association, the rate should only measure the number of people who would work if they were offered a job. People in this position are usually referred to as being *involuntarily* unemployed. This can be in contrast to another type of unemployment in which individuals are without jobs because they have chosen to be in this situation. They would not accept a job if offered one. They have voluntarily, for whatever reason, decided not to work. As you would suspect, individuals in this position are referred to as being *voluntarily* unemployed.

### 1 *Activity*

Of the four types of unemployment described in section 2, identify which ones are best described as being voluntarily or involuntarily unemployed?

Statistics Canada defines a person as unemployed "when that person is able and willing to work and is available for work but does not have to work". So they are trying to identify those in the economy who are unemployed through no choice of their own. The official unemployment rates reported by Statistics Canada try to measure only the *involuntarily unemployed.*

### 2 *Activity*

Suppose Statistics Canada defined as unemployed "any Canadian who is physically able to work and does not have work."

a) What type of unemployment would this definition measure?

b) Explain why you think this would or would not overestimate the economic hardships associated with unemployment.

c) Would you, as a student, be counted as unemployed using this definition?

d) Do you think this definition of unemployment will bias the reported rate downwards or upwards?

e) Make up a definition of unemployment that will bias the reported rate in the opposite direction than found in part d).

Activity 2 should make it obvious that the definition of unemployment can bias the reported rate either upwards or downwards and therefore misrepresent the economic hardships often associated with unemployment.

If the reported rate includes those voluntarily unemployed in its measurement then the true unemployment rate will be overestimated and the associated economic hardships will be biased upward.

## b DEFINITION OF UNEMPLOYMENT

### 3 *Activity*

Suppose it has been estimated that any person defined as being unemployed experiences 100 units of misery as measured by the government's hardship index. Consider the following people who worked at the G.M.C. car plant who are presently not working for the following reasons:

Mr. Abbott - was permanently laid off from the G.M.C. car plant and has been actively looking for another job.

Mr. Bell - is on temporary lay-off from G.M.C. and is collecting because he is guaranteed to be called back to work in another two weeks.

Mr. Gordon - won the Olympic Lottery in 1976, became a millionaire, quit G.M.C. and is living comfortably on his winnings.

Mr. Easton - also on temporary lay-off, guaranteed to be called back in two weeks but is actively looking for another job and would accept another position if one was offered.

Mr. Babcock - an executive formerly at G.M.C. has accepted a new position at Ford Motor Company which starts after his 3 month holiday in Europe.

a) If unemployment is defined to include both the voluntarily and involuntarily unemployed, what is the total amount of misery the hardship index would report?

b) If unemployment is defined to include only the involuntarily unemployed what is the total amount of misery the hardship index would report?

c) Which definition of unemployment best reflects the total amount of hardship experienced by these five individuals?

Inclusion of the voluntarily unemployed biases the associated hardships upwards because in so doing, one runs the risk of counting people like Mr. Gordon. He does not have a job but there is certainly no misery or hardship associated with this fact.

A second reason why those voluntarily out of work should not be included in the definition of unemployment is that its inclusion may bias people's impressions of the overall economic performance. As most people associate unemployment with deficient demand, an increase in the unemployment rate would imply the economy is moving toward a recession. However, a recession is typified by an increase in involuntary unemployment. If the unemployment rate increased because more people chose to be voluntarily out of work, this would give the mistaken impression that the economy was entering a recession. To avoid such an incorrect impression, only involuntary unemployment should be included in the definition of unemployment.

## b DEFINITION OF UNEMPLOYMENT

### 4 *Activity*

Assume that the unemployment rate (incorrectly) measures both the voluntarily and involuntarily unemployed. As the economy's performance improves there are usually more jobs and positions created, and these vacancies usually encourage individuals to quit their jobs and search for one of these better positions. Also, as the economy improves, these individuals are willing to spend more time searching than usual.

a) What could happen to the reported unemployment rate as the economic performance improves in this instance?

b) What mistaken impression will this create concerning the performance level of the economy?

### 5 *Activity*

Consider the following statement by the Leader of the Opposition: "When you take into account all those unemployed including those looking for jobs and those between jobs, the performance of the Canadian economy today is the worst since the Great Depression."

a) Criticize this statement.

# *Measuring and defining unemployment correctly*

## SUMMARY

It is important, if the unemployment rate is to be associated with economic performance and economic hardships, that the definition of unemployment should only include Involuntary Unemployment. We have seen that if voluntary unemployment is included in this definition, then the reported unemployment rate will not be a true reflection of economic hardship, nor will it be a good index of economic performance. This is why the official unemployment rates reported by Statistics Canada *try* to measure only the involuntary unemployed. Obviously, all of the involuntarily unemployed should be included in this calculation. If the reported unemployment rate ignored a large number of involuntarily unemployed workers it should not be used as a proxy for economic hardship or performance.

Therefore, if the unemployment rate is to be associated with economic performance and economic hardships, Statistics Canada, when calculating the official unemployment rates, must try to include *all* of the involuntary unemployment and exclude *all* voluntary unemployment. How successful they are at doing this will be the subject of the next section.

ANSWERS

## *Activity 3*

a) 500 units of misery.

b) 200 units, if Mr. Easton is considered to be involuntarily unemployed.
or
100 units, if some students argue he is actually in search of unemployment, and being laid off gave him the opportunity to search.

c) Including only involuntary unemployment.

# 4 SECTION *Measuring the unemployment rate*

## a INTRODUCTION

The unemployment rate reported by Statistics Canada is supposed to measure the number of individuals involuntarily unemployed at a particular time.

In the fall of 1982, the unemployment rate was 12.2%. But how Statistics Canada actually calculates this rate and how they identify the unemployed are questions we will be concerned with in this section. Also, and probably more importantly, we will see if they a) only count the involuntarily unemployed or do they inadvertently also include some voluntary unemployment in their calculations, and b) count all of the involuntarily unemployed.

## b CALCULATING THE UNEMPLOYMENT RATE

Statistics Canada calculates the number of unemployed expressed as a percentage of the total labour force. The total labour force, in turn, is defined to be the number of people unemployed plus the total employed.

### 1 *Activity*

Calculate the unemployment rates in the following examples using the following formulae:

$$\text{Unemployment rate} = \frac{\text{No. unemployed}}{\text{Total Labour Force}} \times 100$$

Total Labour Force = No. unemployed + No. of employed

Example 1) No. of unemployed = 2,565
No. employed = 18,563

Example 2) Total Labour Force = 25,563,824
No. employed = 24,796,909

Example 3) No. unemployed = 7,589,109
Total Labour Force = 94,863,854

But before these rates can be calculated, Statistics Canada must somehow identify who is unemployed and who is employed. Identifying those in the latter category is obviously a simple task. The unemployment figures are based on information gathered by a sample survey of Canadian households. Approximately 56,000 households are canvassed and interviews are conducted to determine the most recent unemployment patterns. These interviews are held right across Canada to obtain a true picture of unemployment conditions throughout the entire country.

## 2 *Activity*

What would you expect the value of the unemployment rate to be if:

a) the survey was confined to only the Maritime provinces?

b) the survey was confined to only the province of Alberta?

These interviews try to determine whether given individuals should be considered unemployed as defined by the following criterion. For individuals to be considered unemployed during a particular survey week, they must be in one of the following categories. They;

i) were without work, had actively looked for work in the past four weeks and were available for work:

ii) had not actively looked for work in the past four weeks but had been laid off for 26 weeks or less and were available for work;

iii) had not actively looked for work in the past four weeks but had a new job to start in four weeks or less and were available for work.

## 3 *Activity*

Explain why it is necessary to include all three categories when measuring involuntary unemployment.

## C WHAT IS MEASURED?

Remember the unemployment rate will be overestimated whenever the voluntarily unemployed are included. On the other hand, if some of the involuntarily unemployed are overlooked the unemployment rate will be underestimated.

Even though the Labour Survey tries to come up with an unbiased measure of the involuntarily unemployed in Canada, its implementation suggests it may over-or underestimate the true rate.

The survey may overestimate the true employment rate for at least two reasons. First of all, the survey is based on the unavoidable assumption that those interviewed will always tell the truth. This may not and probably is not true. Many of those unemployed are also receiving unemployment insurance benefits, and there are those who will willingly remain unemployed until these benefits run out. They are voluntarily unemployed and therefore should not be included in the unemployed statistics. However, in order to continue to receive these benefits, the government requires them to be actively looking for work. So if asked, by government officials, they will lie about their active participation in the labour market for fear of having their benefits cut off. The second reason the unemployment rate may overestimate the true employment is because it makes no mention of the wages these individuals would be willing to accept. To be involuntarily unemployed, a worker must be willing to accept a job if one is available. But does this mean any job at any wage or does it mean a job with a wage comparable to that traditionally earned in the past? This is not made clear, but it could make some difference to the type of unemployment that is being measured. If an unemployed worker responded to the question "would you accept a job if one was offered?" with the answer "yes, if it was the same job or a better one with the same wage or better than the one I was laid off from", then he is in a sense voluntarily unemployed. Related to this, the survey makes no mention of locational conditions.

## C WHAT IS MEASURED?

### 4 *Activity*

Consider the situation, in which there are 100 vacant and available jobs in Alberta. A worker in Ontario is without work, but is unwilling to move to the West even though he is guaranteed one of the jobs.

a) Would he be recorded as unemployed by the Labour Force Survey?

b) Should he be recorded as unemployed?

c) How does this bias the unemployment rate?

The survey may underestimate the true unemployment rate because it omits some of the involuntarily unemployed. Unfortunately, this is most likely to occur when it matters the most. In severe recessions, jobs may become so scarce and difficult to find that people become discouraged and just stop looking for work. They usually end up on the welfare rolls. As they are not actively looking for unemployment, they would not be counted as unemployed. But this lack of participation is not because there aren't any jobs to be found. If offered, they would quickly accept unemployment and as they are willing to work, should be counted as being involuntarily unemployed.

A second reason why the unemployment rate may understate the true amount of unemployment is it makes no mention of the type of work the employed are doing. As surprising as this may sound, some people, although they have jobs are not fully employed. This may occur for at least two reasons. First, there are those individuals who have "part-time" or "casual" employment who, being unable to find work in their field of specialization are forced to accept a job that does not take advantage of their full potential. Although individuals in these circumstances are not actually unemployed they are involuntarily *underemployed* and the official unemployment rate should acknowledge their existence.

Individuals who have either become discouraged and have dropped from active participation in the labour force or who are *underemployed* have been labelled "the hidden unemployed".

### 5 *Activity*

Will both the inclusion of some voluntary unemployment and the exclusion of the hidden unemployment bias the reported unemployment rate upward or downward?

## SUMMARY

Statistics Canada acquires the necessary data to calculate the unemployment rate by conducting the Labour Force Survey. This is used to estimate the total number of unemployed so it can be expressed as a fraction of the total labour force.

Although they try to only include involuntary unemployment in their measurements, there is reason to believe some voluntary unemployment is inadvertently included. The survey may also ignore that segment of involuntary unemployment referred to as the "hidden unemployment". As the number of hidden unemployment is most likely to be highest during recessions, the reported unemployment rates may seriously underestimate the amount of involuntary unemployment that exists during such periods. Unfortunately, it is impossible to know whether the distortions of including some voluntary unemployment and excluding some of the involuntary unemployment changes the official unemployment rate reported by Statistics Canada upward or downward.

ANSWERS

## *Answers to Activity 1*

Example 1. - 13.8%

Example 2. - 3%.

Example 3. - 8%.

# 5 SECTION *Types and causes of inflation*

## a INTRODUCTION

The theory of inflation is a simple application of the theory of supply and demand developed in section 2. As you saw, prices are determined in markets through the interaction of supply and demand. It was further demonstrated how certain changes in the producers' willingness to supply and consumers' willingness to demand will have predictable effects on the prices in the market. Just as a particular price is determined in a specific market, the general price level which reflects how all prices behave in general is determined in a market containing aggregate demands and aggregate supply. These aggregate functions represent the total or aggregate amount of goods and services demanded by everyone in the economy and the total or aggregate amount all the producers are willing to supply.

The rules of how prices change in response to a change in aggregate supply and aggregate demand are exactly the same as described on page 43 of the text book. (Refer to *Canada's Economy: An Activity Approach*, Jennings, W.E. *et al* (O.I.S.E. Press, 1981.) These basic relationships are reproduced here to refresh your memory, where D = demand, S = supply, P= price, ↑ = increase and ↓ = decrease.

When D ↑ then P ↑
When D ↓ then P ↓
When S ↑ then P ↓
When S ↓ then P ↑

As inflation refers to rising prices, then one would expect this increase is due to either, a) an increase in demand, b) a reduction in supply or c) both an increase in demand and a decrease in supply at the same time.

5 SECTION

# *Types and causes of inflation*

a INTRODUCTION

## 1 *Activity*

Indicate in each of the following what happens to aggregate demand and/or aggregate supply and what you expect will happen to the rate of inflation.

Use arrows to indicate the direction of change. ↑ = increase, – = no change, and ↓ = decrease

| | Demand | Supply | Prices |
|---|---|---|---|
| All Canadians receive an increase in their money income. | | | |
| Costs of Labour suddenly increase. | | | |
| The government expands its expenditures on goods and services. | | | |
| OPEC increases the price of oil causing the costs production to increase. | | | |
| The population in Canada doubles and the strong unions demand and receive higher wages. | | | |

As you have seen, there are three reasons why prices might be rising in the economy. Not surprisingly when economists classify inflation by its causes there are three general classifications: i) Demand - Pull, ii) Cost or Supply Push and iii) Demand and Supply Theory. But before we move on to a more detailed discussion of each type, it is important to understand the relationship between the amount of money in the economy as controlled by the Bank of Canada and the rate of inflation.

## b INFLATION AS A MONETARY PHENOMENON

There has been a great deal of controversy surrounding the Bank of Canada's high interest rate policy over the past two and a half years. The Bank has defended its policy by arguing it is trying to control inflation by reducing the amount of money available to Canadians. This suggests there is some relationship between the amount of money Canadians have available and the rate of inflation.

In Activity 1, you should have found that indeed such a relationship does exist. When the amount of money Canadians have to spend increases, we saw this increases the demand for goods and services and will push up prices. This is especially true if the economy is at or near the full employment level of Gross National Product.

In fact, it has been found that the periods of rapid inflation or hyper-inflation, described in the text on page 63, were always accompanied by rapid expansions of the amount of money available to the consumers. So it seems the amount of money can influence the rate of inflation.

A second interesting fact is, regardless of what caused the inflation, it can not continue on forever unless it is accompanied by increases in the supply of money!

## b INFLATION AS A MONETARY PHENOMENON

### 2 *Activity*

Consider the following example. In each period the economy is at full employment producing 100 units of output. In period 1, there are 10 individuals each spending a total of $5 on this output. The total amount spent is $5 x 10 = $50 and the price per unit is $50/100 units = 50¢ per unit. This is summarized in the first row of the table below.

In period 2, there is an increase in demand as the individuals demand more domestic ouput and less foreign goods. Total amount spent by each individual now is $10.

In period 3, the authorities begin to increase the money supply, giving each individual $10 extra, which is spent on the hundred units of output. This expansion of the money supply continues until period 5. There is no change in the money supply in periods 6 and 7; in period 8, they reduce the money supply.

Complete the following table and answer the following questions.

| 1 Period | 2 Total output | 3 No. of people | 4 Amount spent by each | 5 Total amount spent (3) × (4) | 6 Price of output (5) ÷ (2) | 7 Δ Money supply (+) = increase | 8 Δ Prices (-) = decrease |
|---|---|---|---|---|---|---|---|
| 1 | 100 | 10 | $ 5 | 50 | 0.5 | | |
| 2 | 100 | 10 | $10 | | | | |
| 3 | 100 | 10 | $20 | | | | |
| 4 | 100 | 10 | $30 | | | | |
| 5 | 100 | 10 | $40 | | | | |
| 6 | 100 | 10 | $40 | | | | |
| 7 | 100 | 10 | $40 | | | | |
| 8 | 100 | 10 | $30 | | | | |

a) What was the initial cause of the price increase in period 2?

b) What was the relationship between the increases in the money supply and increases in the price level between the periods 3 and 5?

c) When the money supply stopped increasing, what happened to prices?

This continuation or prolongation of inflationary periods due to increases in the amount of money available is referred to as "validation". The Bank of Canada in a sense validates the existence of price increases.

### 3 *Activity*

Discuss the rationale underlying the Bank of Canada's recent policy of reducing the amount of money available to Canadians.

## SUMMARY

Inflation in general is caused by either an increase in total demand in the economy or a decrease in total supply, or when both demand increases and supply decreases at the same time. Economists classify the types of inflation by its primary cause. These include Demand-Pull (a shift in the demand curve), supply or Cost-Push (a shift in the supply curve) and Demand and Supply Theories (a shift in both the supply and demand curves). The next section will discuss the particular difference between each type of inflation.

But regardless of what was the initial cause of inflation, prices cannot continue to increase indefinitely unless the monetary authorities continuously increase the amount of money available to individuals in the economy. This is referred to as 'validation'. The Bank of Canada's recent high interest rate policy is to gradually reduce the money supply in Canada to correct some of the inflation due to validation policies they (may) have been guilty of in the past.

# 6 SECTION *Types of inflation*

## a INTRODUCTION

The causes of inflation have been placed into three general categories. In this section, we will discuss each type in more detail.

## b DEMAND-PULL THEORY

As the name suggests, this theory attributes rising prices to increases in demand. This type of inflation is most severe when the economy is operating at or near the full employment level of GNP. At this level, all available factors of production, land, labour and capital are working to their full potential. So even though consumers may want to purchase more output, the economy is just physically incapable of producing any more. Prices begin to rise which discourages consumers from demanding more than the economy can possibly produce. Goods become so expensive, fewer people can afford them and they demand less. Once demand has been reduced enough so consumers do not demand any more than the economy can produce, prices stop rising and inflation ends. Unless, of course, the Bank of Canada steps in and validates the inflation by increasing the money supply.

## 1 *Activity*

a) Explain why larger and increasing government expenditures in the late 1960's and during the 1970's may be responsible for some of the inflation that took place in the last decade.

b) Re-examining the historical trends in annual inflation rates, we see that prices were increasing the fastest immediately after the Second World War, 1949-50, during the U.S. involvement in the Korean War 1952-53, and during the U.S. involvement in the Vietnam War, 1966-70.

Explain why this could be described as Demand-Pull inflation.

## C SUPPLY-SIDE THEORIES

When the aggregate supply in the economy decreases, the prices begin to rise. There are four reasons why the supply in the economy might decline.

# *a) Wage-Cost-Push Inflation:*

The supply curve, whether it is the aggregate supply or an ordinary supply curve, reflects the willingness of producers to supply goods and services at every price. When costs increase, the profitability of production declines. This, in turn, reduces the producer's incentive to produce, thus reducing the supply.

One of the major costs faced by producers is the wage bill — the amount they must pay to labour. This theory of wage-cost-push holds that strong unions can demand and receive higher wages for their membership. Employers' costs are consequently forced up and these cost increases are passed on to the final customers through higher prices.

## 2 *Activity*

In Great Britain, unionization of labour is much more widespread than in Canada and the unions are much stronger possessing greater power. How do you expect this fact contributes to Britain's inflationary problems?

# *b) Price-Push Inflation:*

In this case, rather than increased labour costs being responsible for increased prices, the firm with market power simply raises its prices. This is done without any related cost increases and the firm is able to do it because it has control of a monopoly in the market.

C SUPPLY-SIDE THEORIES

## *c) Import-Cost-Push Inflation:*

Canada purchases a large proportion of goods and services from other countries, particularly the United States. If inflation breaks out in the U.S., then all the goods produced there, including the ones we import, become more expensive to buy. If Canadians continue to import these goods, then we experience increasing prices and inflation. Of course, this only explains how inflation is transferred from one country to another. It does not explain what initially caused the inflation in the country where it originated.

3 *Activity*

Discuss the implications of OPEC price increases that have occurred in the last decade on the rate of inflation in Canada. What type of Supply-Push Inflation are those price increases?

## *d) Structural Inflation:*

In a previous section, we discussed structural unemployment. This was caused by rigidities in the economy which restricted the free movement of labour from a contracting sector of the economy to an expanding sector. Structural inflation is related to this concept. The expanding sectors of the economy require more labour and other factors to satisfy the increased demand for their products. The employers offer higher wages and compensation to encourage workers to move and come to work for them. As these workers are reluctant to move in the first place, the amount they must be paid is higher than it otherwise would be. Costs of production are increased more than usual and the supply is reduced, increasing prices.

4 *Activity*

Would inflation be less if labour from Ontario were more willing to give up the jobs in the declining automotive industry and move to the west?

## d SUPPLY AND DEMAND THEORIES OF INFLATION

In the above discussion, we considered inflation to be caused by either an increase in demand or a decrease in supply. There is widespread belief among economists today that a demand inflation can spawn a supply-side inflation. This has important implications concerning general economic performance. If increased demand initially causes inflation and this causes a reduction in supply, two effects will result. First, when the initial cause of too much demand is eliminated, inflation will continue because the reduced supply has now taken over. So inflationary periods can be expected to be more prolonged. Second, a reduced supply will mean less output and this will mean higher unemployment. If you remember back to the very first section, this is exactly what has been happening to the Canadian economy in recent years. This situation of high inflation and high employment has been labelled "STAGFLATION".

### 5 *Activity*

1 - From what two words do you think the word "Stagflation" originated?
2 - Do you think it aptly describes the present economic situation?

There are two theories which try to explain how a demand inflation can be converted into a supply-based inflation. These are expectational theories and inertial theories.

## *a) Expectation Theory*

This is based on the observation that once inflation begins and continues for a time, people begin to expect inflation to continue into the future. If workers believe inflation to be 3% in the future and they wanted a 5% increase in their wages, they would have to ask for an 8 per cent increase - 3% just to keep up with inflation plus 5% to get the wage increase they want. Labour costs now increase, causing wage-cost-push inflation.

d SUPPLY AND DEMAND THEORIES OF INFLATION

You should be able to see what may happen here. Because people expected inflation to continue in the future, they took the necessary actions to protect themselves. But these very actions ensured inflation would continue, reinforcing the initial expectations. The next time they come to negotiate a new wage settlement, they will form the same type of expectation about future inflation continuing. A "vicious" circle is created which is difficult to stop, resulting in prolonged bouts of inflation.

## 6 *Activity*

The N.D.P. finance critic blames the present high rate of inflation on excessive government expenditure causing demand-pull inflation.

The Prime Minister has pointed out that government expenditure as a % of GNP has been reduced in recent years and it is the excessive demands of labour leaders which are responsible for the present high rates of inflation.

Why could both statements be correct?

## *b) Inertial Theory*

The inertial theory is based on the belief that once inflation begins it can continue on its own inertia for extended periods of time.

This theory argues that workers base their wage demands on what other workers in comparable positions are demanding or have received. So if everyone else received an 8% increase, it is only fair they should also receive at least 8%. As you can see, this could continue on indefinitely, or until someone is willing to receive only 6%, encouraging everyone to now accept only 6%. It is difficult to find someone willing to be the first one to start this downward trend.

## 7 *Activity*

Given the discussion above what do you think is the rationale behind the government's six- and-five policy?

## SUMMARY

Economists have placed the causes of inflation into three general categories. Demand-Pull inflation is caused by an increase in aggregate demand. Supply-Side inflation is caused by a reduction of the economy's aggregate supply curve. This reduction in supply can be due to a number of cost-increasing phenomena. Finally, inflation may be caused by a combination of both an increase in demand and a reduction in supply. When this occurs, the economy can be thrown into the situation known as stagflation. The effectiveness of any government policy in fighting inflation will depend crucially on identifying the primary cause of inflation and adopting the appropriate policy with which to deal with the problem. This matching of the correct policy with the specific cause of inflation has proven to be a difficult task for governments. This is further complicated when economists disagree amongst themselves as to the primary cause of a given inflationary period.

7 SECTION

# *Measuring inflation*

a

## INTRODUCTION

When someone mentions the word inflation, what most commonly comes to mind is an increase in the Consumer Price Index, CPI. Once a month, Statistics Canada reports the monthly CPI and this is often interpreted as a reflection of the rate of inflation. What it actually measures is the change over time of the purchasing power of the consumer dollar. The term purchasing power here refers to the amount of goods and services a dollar is able to buy. This purchasing power will vary as the prices of goods and services vary. The CPI records these variations.

## b CALCULATING THE CONSUMER PRICE INDEX (CPI)

The simplest way of thinking of the CPI is to consider a fixed basket of goods and services most commonly purchased by the average Canadian household. At any moment in time, this basket will have a total cost determined by the prices of each of its components. When these prices change, the cost of buying this basket of goods and services will change. If all the elements in the basket become more expensive, then the total cost of the basket increases and it will require more dollars to buy them. In this case, the purchasing power of a dollar has been eroded; it has declined. This is because it now takes more dollars to buy the same basket than it did before the prices went up, so each dollar is now able to purchase less. Alternatively, the same number of dollars will not be able to purchase as many goods and services as previously. The CPI simply measures this change in the cost of the representative basket.

## b CALCULATING THE CONSUMER PRICE INDEX (CPI)

### 1 *Activity*

Consider the following basket of goods. Calculate for each example the total cost of the basket.

| Basket | Initial Price | Example 1 | Example 2 | Example 3 | Example 4 |
|---|---|---|---|---|---|
| 5 lbs. Beef | $2.00/lb. | $2.50/lb. | $3.50/lb. | $2.40/lb. | $2.10/lb. |
| 3 lbs. Chicken | $1.65/lb | $2.00/lb. | $1.50/lb. | $1.20/lb. | $1.40/lb. |
| 1 dozen Eggs | $0.99 | $0.99 | $0.89 | $1.00 | $0.89 |
| 1 loaf Bread | $1.09 | $1.20 | $0.79 | $1.05 | $1.10 |
| 1 pkg. Cookies | $2.09 | $2.12 | $1.00 | $1.47 | $2.10 |
| Total Cost | | | | | |

Calculate the percentage change in the total costs of each example from the cost of the initial basket and complete the following table.

| 1 Total Cost of the Basket | 2 Number of goods whose price increased | 3 Number of goods whose price decreased | 4 % change in the cost of the Basket $\frac{\text{Col. (1) } -19.12}{19.2} \times 100$ | 5 Change in purchasing power ↑ = increase o = no change ↓ = decrease |
|---|---|---|---|---|
| Ex. 1 $22.81 | | | | |
| Ex. 2 $24.68 | | | | |
| Ex. 3 $19.12 | | | | |
| Ex. 4 $18.79 | | | | |

a) Is it necessary for the price of each good in the basket to increase for the total cost to increase?

b) What happened to purchasing power when the percentage change in prices was positive, negative, zero?

## b CALCULATING THE CONSUMER PRICE INDEX (CPI)

For ease of comparison the CPI is reported as a relative index. This means the price of the CPI basket in the base year is assigned a value of 100 and the prices at all other times are expressed as a percentage of the price in the base period. If the price of the basket had increased by 148% since the base year, then the CPI index would read 248%. When prices fall the CPI will be less than 100. (In Canada the base year is 1971.)

### 2 *Activity*

In the following, calculate what the CPI would read for each of the years if prices have increased by the following percent since the beginning of 1971.

| Year | 1<br>% Δ in price since January 1, 1971 | 2<br>CPI | 3<br>% Δ per Annum |
|---|---|---|---|
| 1971 | 2.90 | | |
| 1972 | 7.84 | | |
| 1973 | 15.93 | | |
| 1974 | 28.56 | | |
| 1975 | 42.46 | | |
| 1976 | 53.14 | | |
| 1977 | 65.39 | | |
| 1978 | 80.28 | | |
| 1979 | 96.68 | | |
| 1980 | 116.54 | | |

In many cases, it is more informative to know the percentage change in price per annum. That is how much price changed in one year's time, for instance between 1972 and 1973. This per annum percentage change can be calculated by the following equation.

$$\text{Percentage change per annum} = \frac{\text{CPI 1972 - CPI 1971}}{\text{CPI 1971}} \times 100$$

$$= \frac{107.84 - 102.9}{102.9} \times 100 = 4.8$$

### 3 *Activity*

Calculate the per annum percentage change (Δ) in prices for each of the years and enter them in Column 3 in the table in Activity 2.

## C INDEXATION AND THE COMPOSITION OF THE BASKET

The most important application of the CPI is its use as the basis for "indexation" of contracts and other regulatory arrangements. Most union contracts are indexed through Cost-Of-Living Adjustment (or COLA) clauses and since 1973, the Canadian income tax system has been indexed. The purpose of indexation is to protect individuals from the effects of inflation.

For instance, personal income tax exemption levels have been directly linked to changes in the CPI. When the CPI increases, the level of exemption rises and the amount of tax paid falls. This is an effort to increase the fairness of the tax system.

To illustrate this, suppose you earn $100 per week working after school, to purchase record albums. But you must pay $10 income tax, leaving you with $90.00 left to spend. If records cost $9.00 each you are able to purchase ten records with your earnings.

But now suppose records become more expensive costing $9.50 each. You can no longer purchase ten records with the $90.00 of income. Your real purchasing power or your real income has fallen so should you not be allowed a reduction in your income tax? The government decided in 1973 that the answer to this was yes. So they linked the amount of income tax you are expected to pay to your real income. In our example, as your real income (the number of records you could purchase) fell, your income tax will also be reduced.

Another example of indexation is cost-of-living adjustments of COLA clauses that are linked to movements in the CPI. Again these are to partially protect workers from the effects of inflation. In this case, when the CPI increases, wages and salaries are automatically adjusted to compensate for the potential loss in purchasing power.

These are but two examples but there are many others in Canada including unemployment insurance benefits, pensions for the civil service and other contractual agreements such as alimony and child support payments.

As indexation based on the CPI is so wide-spread in Canada, it is important that it is a good reflection of inflation. If the CPI overestimates the real rate of inflation, then indexation will more than compensate for the effects of rising prices. While if the CPI underestimates the real rate of inflation, indexation will not adequately protect individuals from inflation.

C INDEXATION AND THE COMPOSITION OF THE BASKET

## 4 *Activity*

Consider the following examples of COLA clauses linked to the CPI. Remember the purpose of these clauses are to maintain the purchasing power of the workers' wages and salaries.

Assume a worker is paid $100 in 1971 prices, allowing him to purchase one hundred dollars worth of goods and services in 1971. Complete the following table for each of the three examples and answer the accompanying questions.

| | True Inflation Rate (Base = 100) | Estimated Inflation Rate by the CPI (Base = 100) | The increase income required to maintain purchasing power Col. (1) - 100 | Actual Increase Col. (2) - 100 | Changes in Purchasing Power Col. (2) - Col. 1 |
|---|---|---|---|---|---|
| Ex. 1 | 110 | 100 | | | |
| Ex. 2 | 110 | 110 | | | |
| Ex. 3 | 110 | 130 | | | |

A) What happened to this worker's purchasing power when the CPI:

i) understated the true rate of inflation?

ii) measured exactly the true rate of inflation?

iii) overstated the true rate of inflation?

As you can see from the last activity, we should try to eliminate any errors in how the CPI measures inflation. Of course, the CPI will never be a perfect measure, but given the extensive use of the CPI, we should strive to minimize the number and severity of these errors.

How well the CPI measures the rate of inflation will depend on what is included in the representative basket of goods and services, on which it is based. If the basket was made up of things that the average Canadian did not buy, then there will be no relationship between the CPI and the actual rate of inflation experienced by Canadians.

## C INDEXATION AND THE COMPOSITION OF THE BASKET

### 5 *Activity*

Suppose the CPI was based on a basket of goods which contained only champagne and caviar. Most Canadians do not eat much of either. They do however consume huge amounts of beef and pork.

Compare the CPI calculated based on each of the baskets and complete the following questions and table.

| 1<br>Year | 2<br>CPI for Caviar & Champagne<br>Base = 100/1971 | 3<br>CPI based on Beef & Pork<br>Base = 100/1971 | 4 | 5 |
|---|---|---|---|---|
| 1975 | 102 | 150 | | |
| 1978 | 105 | 210 | | |
| 1980 | 110 | 250 | | |

a) If you earned $100 in 1971 and had a COLA clause linked to the Champagne Caviar basket, how much additional income would you receive in each year 1975, 1978, 1980? Place these in column 4.

b) If your COLA clause was linked to the Beef and Pork basket, how much additional income would you receive in each year 1975, 1978, 1980? Place these in column 5.

c) Which one do you believe best reflects the rate of inflation experienced by Canadians?

If the basket is not representative of what Canadians consume, the CPI is useless as a measure of inflation and indexation is meaningless. Statistics Canada tries to ensure that the basket on which the CPI is calculated is representative of what Canadians consume by surveying households and updating the basket every four years.

A related problem is that the average consumer does not divide his/her expenditures equally between all goods and services contained in the basket. Some goods, by their very nature, will demand a larger proportion of the consumer dollar than others. So not only is it important that the correct commodities are included in the basket, but the relative importance of each is recognized.

If the basket on which the CPI is calculated assigns more importance to a particular good than it actually deserves, then the true level of inflation experienced by Canadians will be overestimated.

ANSWERS

# *Activity 1*

(PART 1)

| | | | | | |
|---|---|---|---|---|---|
| Total Cost | $19.12 | $22.81 | $24.68 | $19.12 | $18.79 |

(PART 2)

| | | | | | |
|---|---|---|---|---|---|
| Ex. 1 | $22.81 | 4 | 0 | + 19.2 % | ↑ |
| Ex. 2 | 24.68 | 1 | 4 | + 29 % | ↓ |
| Ex. 3 | 19.12 | 2 | 3 | 0% | 0 |
| Ex. 4 | 18.79 | 3 | 2 | - 1.72% | ↑ |

# *Activity 2*

| CPI | % change Δ per/ann. |
|---|---|
| 102.9 | 2.9 |
| 107.84 | 4.8 |
| 115.93 | 7.5 |
| 128.57 | 10.9 |
| 142.46 | 10.8 |
| 153.14 | 7.5 |
| 165.39 | 8.0 |
| 180.28 | 9.0 |
| 196.68 | 9.1 |
| 116.54 | 10.1 |

# *Activity 4*

| | | | |
|---|---|---|---|
| Ex. 1 | 10 | 0 | -10 |
| Ex. 2 | 10 | 10 | 0 |
| Ex. 3 | 10 | 30 | + 20 |

SECTION

# *Myths and misperceptions about inflation*

MYTH

*"An increase in the CPI affects everyone equally"*

There is a great deal of misunderstanding surrounding the phenomenon of inflation. Hopefully the next two sections will help to dispel some of these misperceptions.

Whenever Statistics Canada reports an increase in the Consumer Price Index, everyone immediately assumes they are made worse-off. As you are now aware, the CPI is based on a representative basket of goods purchased by the average Canadian. Being based on the average value, any change in the CPI will affect some people more than others and will have differing effects on people at different times.

For instance, the CPI assumes that the average Canadian spends 35.37% of their expenditures on housing and of this 13.09% is assigned to owner accommodation. This is calculated on the assumption that 20% of all owner occupied homes require a new mortgage each year. When the costs of mortgages increase due to high interest rates, this will cause the CPI to go up. But this will affect the 20% of Canadian home owners who are either buying new homes or are renewing mortgages. The majority of Canadians will be unaffected by such price increases because they do not have to acquire a mortgage.

8 SECTION

# *Myths and misperceptions about inflation*

1 MYTH

## 1 *Activity*

In the following examples, indicate which increases in the CPI would have no effect on you personally.

1) CPI increases by 10% because of the Bank of Canada's high interest rate policy making mortgages more expensive.

2) The CPI increases by 5% because of an increase in the price of major household appliances including electronic components.

3) The CPI's latest increase is due to an increase in the prices of women's and girl's wear, men's and boy's wear and infant's clothing.

When there is an increase in the CPI, this does not mean everyone is faced with higher prices. In fact, an increase in the CPI may not affect you at all and it may even make some people better off!

1 MYTH

## 2 *Activity*

Suppose you have an income of $100 that is fully indexed to the CPI. This means whenever the CPI rises by 10% your income also rises by a fully 10%. Your two neighbours, Mr. Jones and Mr. Smith, also have $100 incomes but only Mr. Jones' is fully indexed; Mr. Smith's is not indexed at all. The CPI increases by 20% due to a rise in the interest rates and the costs of buying mortgages. Complete the following table and answer the following questions.

| | Increase in CPI | Increase in $ | Change in the Purchasing Power |
|---|---|---|---|
| You (don't own a house) | 20% | | |
| Smith (owns a house and does not have to renew the mortgage) | 20% | | |
| Jones (owns a house and must renew the mortgage) | 20% | | |

a) In terms of purchasing power, are you better or worse off due to an increase in CPI?

b) Is the same true for Jones and Smith?

As you can see, whether the rise in the CPI will have any influence on your own individual purchasing power and well-being will depend on whether you consume the goods whose prices increased. Furthermore, if you do not purchase the goods responsible for the increase in the CPI and your income is indexed, your individual purchasing power will actually increase due to inflation.

Related to this, whether an individual feels any effects of inflation will depend on whether or not they continue to consume the more expensive goods or whether they can find acceptable alternatives.

## 2 MYTH

*"Borrowers of money lose during periods of inflation due to the accompanying high rates of interest"*

Canada and the United States have just undergone a period of unprecedentedly high rates of interest. During this time, a large number of people and consumer groups assumed those individuals who could afford to lend money at these exorbitant rates made unfair profits. Surprising as it may seem, unless the rate of interest keeps up with the rate of inflation, it is the lenders who will be the losers in times of inflation! This is because the purchasing power of the dollars lent out will have been eroded away due to inflation by the time the borrowers pay them back.

2 MYTH

3 *Activity*

Suppose you and your best friend go shopping. You have $100 to spend but your friend is broke until next month. You have decided you are going to spend the entire $100 on records costing $5.00 a piece. Your friend, who is broke, finds $100 worth of records he/she just has to have and asks you to lend him/her your $100 with the promise you will be paid back next month. At that time you will be able to purchase the records you would like to buy. You do not charge interest on the loan. Consider the following cases, fill in the table and answer the accompanying questions.

Case 1: You do not lend the money to your friend, the price of records remains at $5.00 apiece.

| | Amount spent over the two months | Number of records bought this month = $100/price/record | Number of records bought next month = $100/price/record |
|---|---|---|---|
| You | $100 | | |
| Friend | $100 | | |

Case 2: You do not lend the money to your friend, the price of records increases to $10.00 apiece.

| | Amount spent over the two months | Number of records bought this month = $100/price/record | Number of records bought next month = $100/price/record |
|---|---|---|---|
| You | $100 | | |
| Friend | $100 | | |

Case 3: You do lend the money to your friend, the price of records remains at $5.00 apiece.

| | Amount spent over the two months | Number of records bought this month = $100/price/record | Number of records bought next month = $100/price/record |
|---|---|---|---|
| You | $100 | | |
| Friend | $100 | | |

Case 4: You do lend the money to your friend, the price of records increases to $10.00 apiece.

| | Amount spent over the two months | Number of records bought this month = $100/price/record | Number of records bought next month = $100/price/record |
|---|---|---|---|
| You | $100 | | |
| Friend | $100 | | |

a) Compare Case 2 with Case 4 when the price increased to $10.00 per record.

i) How many records could you buy if you didn't lend the money? (Case 2)

ii) How many records could you buy if you did lend the money and waited until next month to buy? (case 4)

iii) In times of inflation, (with zero rate of interest) is it better to lend or borrow money?

2 MYTH

This activity demonstrates that during periods of inflation borrowers gain at the expense of the lenders. If you don't lend the money, your friend must postpone his purchases until when the prices are higher and he can only buy 10 records. But if you do lend the money then it is you who must face the higher prices and it is you who can buy only 10 records with the $100.

In this simple example, you did not charge any interest on the loan. But even if you did, you still may not avoid a reduction in your purchasing power.

The interest rate has two basic roles. First, it is a payment to the lender by the borrower for the use of his money. In our example, because you had $100, you had the right to purchase records before your friend, who was broke. Your friend wanted you to postpone your purchase so he could use your money and be first to buy the records. The rate of interest is simply the amount your friends would have to pay you for waiting.

The rate of interest is usually expressed as a percentage of the principal of the loan. That is, if the rate of interest is 5%, the borrower must repay the total amount he borrowed (the principal) plus 5% of the initial amount for each period he has it. If you had charged a rate of interest of 5% a month on the $100 loan to your friend in activity 3, then he/she would have to pay back $105. If the rate is 5% a month and the loan lasted only one month then the easy way to calculate how much must be repaid at the end of the month is given by the following formula.

Amount to be repaid = principal (1 + rate of interest). In our example then, this will equal $100(1+0.05) = $100 + $100×0.05 = $100 + $5 = $105.

2 MYTH

4 *Activity*

In the following examples, calculate how much your friend would have to repay if you decided to charge interest on the $100 loan for the month in Activity 3. Assume prices of records remain unchanged at $5.00 apiece.

| 1<br>Loan | 2<br>Rate of Interest | 3<br>Amount to be repaid after one month = $100 (1 + Col. 2) | 4<br>Purchasing Power of the repayment Col. 3 ÷ $5.00 | 5<br>Number of Records your Friend will pay to use your $100 Col. 4 -20 |
|---|---|---|---|---|
| $100 | 5% = 0.05 | | | |
| $100 | 10% = 0.10 | | | |
| $100 | 50% = 0.50 | | | |
| $100 | 100% = 1.00 | | | |

a) In terms of the number of records, when the rate of interest is 5%, how much will your friend pay for the opportunity of not having to wait another month before he can buy records?

b) As the rate increases, what happens to the cost of this opportunity to be first?

When you lend money to someone, you relinquish your right to be the first one to consume and you allow the borrower to take your place. The rate of interest is the amount you are paid for waiting. In our example, if you are willing to accept one additional record for waiting until next month before buying records, you are charging 5% interest.

The second role of the interest rate is to try to maintain the lender's purchasing power during times of inflation. In Activity 3, we saw that, when the price of records increased and you were not charging any interest whatsoever, your purchasing power was eroded. How could you avoid this loss? One way would be to negotiate the terms of the loan so your friend, rather than paying back $100, agreed to pay back enough money to allow you to purchase 20 records regardless of the price. This would maintain the purchasing power of our original $100. Such agreements are difficult to make but if you charged a rate of interest high enough, this would have exactly the same effect. This is the reason why interest rates are so high in times of inflation. Individuals are reluctant to lend money during inflationary periods unless the original purchasing power is somehow protected. High interest rates offer this protection and encourage people to lend out their money.

2 MYTH

5 *Activity*

Suppose you and your friend agree to a 5% rate of interest on the $100 loan. Complete the following table and answer the accompanying question(s). Indicate a change in purchasing power by + = increase and - = decrease.

| Price | Purchasing Power $105/col. 1 | % Δ Prices = col. (1) - $5.00 / $5.00 | Rate of Interest | % change in Purchasing Power |
|---|---|---|---|---|
| $5.00 | 105/ 5 = | | 5% | |
| $5.15 | 105/ 5.15 = | | 5% | |
| $5.25 | 105/ 5.25 = | | 5% | |
| $5.52 | 105/ 5.52 = | | 5% | |
| $10.50 | 105/10.50 = | | 5% | |

a) What is happening to the purchasing power of your $100 when the rate of interest is:

i) greater than the percentage change in price?

ii) equal to the percentage change in price?

iii) less than the percentage change in price?

# *Myths and misperceptions about inflation*

## SUMMARY

When the rate of interest is less than the rate of inflation, in terms of real purchasing power, those who lend money lose and those who borrow gain. Therefore, in order to encourage people to lend their money, the rate of interest must somehow keep pace with the rate of inflation. The high interest rates of the early 1980's can be partially explained by the unprecedentedly high *expected* rates of inflation entertained by lenders at that time. They expected prices to continue to increase in the future and so were reluctant to lend their money unless offered some fraction of protection in the form of higher interest rates.

Two prominent Canadian economists, R.D. Lipsey and D.D. Purvis, argued in an article in the Financial Post in the spring of 1982, that "most of the recent increase in market rates represents an increase in the inflation premium". This is the proportion of the interest rate required to make up the erosion of purchasing power due to inflation.

8 SECTION

# *Myths and misperceptions about inflation*

1 MYTH


... Montagnes (Legal affairs), Robert L. Perry (Special projects), Gordon Pitts (Personal finance), John Seganich (Investments).

... Dimitrijevich (Banking, Real estate), Caroline Green, Ann Shortell, Bureaucrats: Joan Murphy; Small business: Marianne Toffi. Special projects: Eva Innes. Special reports: Renate Leick. Travel & tourism: Joan Howard.

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**ALTHOUGH BORROWERS' COSTS RISE SHARPLY**

## Lenders lose by inflation ...

By Richard Lipsey and Douglas Purvis

**IF YOU had borrowed $10,000 at a fixed rate of prime plus 1% for one year starting in August, 1965, you would have paid $675 in interest. If you had taken out the same loan in August, 1981 your interest payments would have been $2,375.**

Five years ago, today's Bank Rate of 15% would have been hard to imagine and last August's 21% rate would have been inconceivable. The provincial First Ministers recently labeled interest rates as "immorally high."

But according to most relevant measures, rates are not exorbitantly high. Interest rates have two components: an inflation premium and a *real* return.

The inflation premium insures that repayment of the loan includes compensation for the inflation-induced erosion of the purchasing power of the original loan. Thus, at the current inflation rate of about 12%, if I lend someone $10,000 today I will need $11,200 back next year just to break even on purchasing power.

### Real return

The real return represents the real gain to savers and the real burden to borrowers. If I lend $10,000 today and ask back $11,500 next year, this market rate of 15% represents only a 3% real return; the other 12% is needed just to maintain the purchasing power of the principal lent in the first place.

The real return received by savers is even smaller than the above argument suggests. Taxes are levied on interest income inclusive of the inflation premium, even though that component is just reimbursement for lost purchasing power of principal. If, for example, there is an increase in the market interest rate matched by an increase in the inflation rate so that the before-tax real interest rate is constant, the after-tax real interest rate will fall.

The accompanying chart shows the recent behavior of three measures of interest rates. The top line shows that market interest rates have risen dramatically since 1977. The middle line shows the *realized* real rate on a one-year loan that is implicit in the market rates. It is calculated by taking the market rate on any given date and subtracting from it the actual inflation rate experienced over the next 12 months.

As can be seen, that rate has been quite erratic, but it does not show any dramatic tendency to rise. In particular, recent real interest rates are not high by the standards of the 1960s. Very high real rates were temporarily experienced during the summer of 1981 when market rates soared to the 20% range. Nevertheless, the upward trend in market rates has not been matched by real rates; most of the recent increase in market rates represents an increase in the inflation premium.

The lowest line in the chart shows the after-tax real return to a saver who pays 40% of his market interest earnings in taxes. This calculation allows both for tax liabilities and the depreciation suffered because of inflation. Throughout the entire decade of the 1970s this return was negative, and even the surge in interest rates in the summer of 1981 failed to make it positive.

Far from being immorally high, real interest rates could be called "immorally" low. Savers have been fleeced. They have not received a premium as a real return for saving and lending their money, and they have not even been repaid for their original purchasing power. (Note that for long periods of time the government has actually been charging us for the privilege of lending to it, as large deficits were financed at negative real interest rates; only recently has the government had to pay positive real interest on debt.)

Evaluating the real burden to borrowers is very difficult. Even at constant real interest rates, an increase in inflation matched by an equal increase in market interest rates generates a serious cash-flow problem since the inflation premium represents an accelerated repayment of the principal of any loan over what would happen if inflation and the inflation premium were absent. There is also an enormous spread in the real burden of borrowing across various classes of borrowers. Some can deduct interest cost; others cannot. Some are affected by inflation-induced tax distortions; others are not.

### Increasing gap

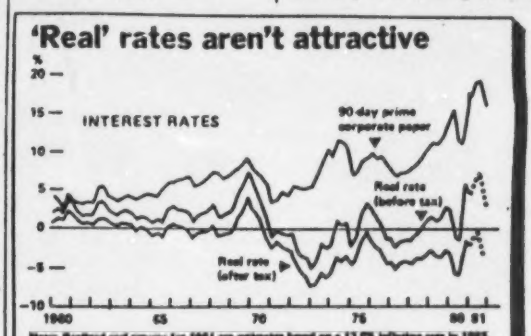
The increasing gap between the lines showing before-and after-tax real interest rates results from the increased "tax distortion" caused by increased inflation. To illustrate this distortion, consider a contract where the borrower cannot deduct his interest payment and the lender is in the 50% tax bracket.

At zero inflation and a before-tax real interest rate of 4%, the lender receives one half of what the borrower pays. This yields an after-tax real return of 2%, while the government receives the other 2%. At 10% inflation and the same before-tax real rate of 4%, the market rate rises to 14%. Now the lender again receives one half of what the borrower pays but this 7% is less than the full inflationary premium and yields an after-tax real return of *minus* 3%. The government has now appropriated more than the whole of the real return on the contract by virtue of taxing the inflationary premium as well as the real return.

Negative before-tax real interest rates cannot be expected to persist. They occur when the market underpredicts the actual inflation rate. Once expectations catch up, however, the level of interest rates associated with a normal level of activity in the country should be about 2%-4% above the rate of inflation. This means that prime interest rates in the 14%-17% range are about "normal," given Canada's current inflation rate.

If savers expect to preserve the purchasing power of their principal and receive some modest real return, and if borrowers expect to pay in real terms for borrowing, then we cannot conclude that, a couple of blips aside, interest rates are surprisingly high. Indeed, if there is any surprise at all, it is that so many savers seem to have put up with negative after-tax real rates of interest for so long.

If any reaction to current "high" rates is required it is not Bank of Canada action to force down rates dramatically, but Department of Finance action to reform the tax system with respect to interest deductibility. This might eliminate some of the worst distorting effects of a system that taxes not only the real return on lending but also the inflationary premium that only serves to preserve principal against inflationary erosion.





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Financial Post (April 1982)


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ANSWERS

## *Activity 3:*

| Case 1, | Col. 2 | Col. 3 |
|---|---|---|
| You | 20 | 0 |
| Friend | 0 | 20 |
| Case 2, | | |
| You | 20 | 0 |
| Friend | 0 | 10 |
| Case 3, | | |
| You | 0 | 20 |
| Friend | 20 | 0 |
| Case 4, | | |
| You | 0 | 10 |
| Friend | 20 | 0 |

## *Activity 4:*

| Col. 3 | Col. 4 | Col. 5 |
|---|---|---|
| $105 | 21 | 1 |
| $110 | 22 | 2 |
| $150 | 30 | 10 |
| $200 | 40 | 20 |

## *Activity 6:*

| Col.2 | Col. 3 | Col. 5 |
|---|---|---|
| = 21 | 0% | (+) |
| = 20.4 | 3% | (+) |
| = 20 | 5% | (0) |
| = 19 | 10.4% | (−) |
| = 10 | 101% | (−) |

# 9 SECTION

# *More myths and misperceptions about inflation*

## 3 MYTH

*"The Cost of Inflation is the Erosion of Living Standards."*

Most people believe that the major cost of inflation is the erosion of their standard of living. But as the text book correctly points out on page 60, (refer to *Canada's Economy: An Activity Approach.* Jennings, W.E. *et al.*, O.I.S.E. Press, 1981) the average income in Canada has more than kept pace with the rate of inflation. The cost of inflation is *NOT* the erosion of the standard of living in Canada.

If this is true, then what is the real cost of inflation? The first two myths about inflation offer a clue to the answer to this question. There we saw that inflation does not affect everyone equally and, in fact, some people can actually be made better off during periods of inflation, depending on what goods they do or do not purchase. In the second case, when the rate of interest does not keep pace with inflation, lenders lose and borrowers gain. It is this redistribution of incomes and its subsequent consequences that is the real cost of inflation.

3 MYTH

## 1 *Activity*

Suppose two classmates eat lunch together each day. Jane buys a ham and cheese sandwich and two pints of milk. Anne buys a hamburger and two cokes. The prices they face are given in column 1 of the following table. During an inflationary period, prices change and are now given in column 2.

| | 1<br>Prices | 2<br>New Prices |
|---|---|---|
| Ham and cheese sandwich | $1.00 | $1.10 |
| Milk | .50 | .55 |
| Hamburger | 1.20 | 1.20 |
| Coke | .40 | .40 |

a) How much did Jane's lunch cost before the inflation?
b) How much did Anne's lunch cost before the inflation?
c) How much do their lunches cost after the inflation?
d) In terms of purchasing power, did inflation affect them equally. If not, is there any reason why the girl receiving the most adverse effect should deserve such treatment?

Inflation haphazardly alters individuals' incomes, causing resentment and, in some instances, real social tensions. In the Activity, because Jane's lunch contained those goods whose prices increased the most, she is, in a sense, being punished for the particular consumption pattern she chose. Jane may come to resent this.

A more serious consequence of inflation is the potential for a wasteful and costly redistribution of some factors of production. In the economic system, prices act as signals. When the demand for a product increases, the price is forced up. This is a signal to producers that the society wants more of this good and the higher price makes it more profitable to give society what it wants. Producers supply more and to do so, they must hire more labour and more machines. We expect more of each of these factors of production to be employed in this line of work.

A problem arises because inflation can distort this signalling mechanism of the price system and have extremely undesirable results. If the increase in price is due to the uneven effects of inflation, then when producers respond to this increase, they will produce more goods than society wants. This may also mean that the economy will produce less of some goods than society wants.

3 MYTH

2 *Activity*

Suppose the economy has only two industries, medical care and farming. Inflation causes the price of both goods to increase but the price of food increases slower than the price of medical care, making supplying medical care ten times more profitable than farming.

a) What do you expect will happen to the output of food in this economy?

b) What do you expect will most likely happen to the production of medical care?

c) Has there been any change in the demand for either of the goods?

d) Given your answer in part c), should the production of either good be changed?

The preceding activity should demonstrate to you that although the hypothetical economy did not change their demands or requirements for medical care, there were more of these services being produced. It was the distorting effect on prices due to inflation that was responsible for this rather undesirable and potentially serious outcome.

# *More myths and misperceptions about inflation*

## 1 MISPERCEPTION

*"Why so Many People Believe Inflation is Responsible for a Fall in Their Standard of Living."*

If you conducted a poll, you would find that the majority of Canadians would refuse to accept the fact that inflation has not caused a decline in their standard of living. It makes one wonder how so many people can be convinced of something that is so wrong. It just so happens there is a very simple explanation for this popular misconception.

It arises because any noticeable increase in income occurs usually once a year, while prices, during an inflationary period, increase continuously throughout the entire time. Because income then is basically constant for that yearly period, people entertain the mistaken impression they are living on a fixed income that is being constantly eroded by rising prices.

1 MISPERCEPTION

## 3 *Activity*

Complete the following table and answer the accompanying questions. Suppose income is increased each January.

| Date | 1 Prices | 2 Income | 3 Purchasing Power Col. 2 ÷ Col. 1 | 4 Δ in Purchasing Power in the year. ↓ = decrease ↑ = increase | 5 Δ in Purchasing Power since previous January Col. 3 Jan/76 - Col. 3 Jan/75 ↓ = decrease ↑ = increase |
|---|---|---|---|---|---|
| Jan. 1975 | $1.00 | $100 | | | |
| Dec. 1975 | $1.10 | $100 | | | |
| Jan. 1976 | $1.10 | $200 | | | |
| Dec. 1976 | $1.21 | $200 | | | |
| Jan. 1977 | $1.21 | $300 | | | |
| Dec. 1977 | $1.33 | $300 | | | |

a) What happens to the individual's purchasing power during each year?

b) What happens to the individual's purchasing power between 1975 and 1976?

Between 1976 and 1977?

This popular misperception is the result of people measuring the change in their purchasing power due to inflation between increases in income. What they ignore is that the increase in their income in January is more than enough to compensate for the increase in prices that occur throughout the rest of the year. So by the end of each year they have more purchasing power than they had at the same time the year before, even though prices have increased. Their living standards were not eroded but actually increased.

# 9 SECTION

# *More myths and misperceptions about inflation*

## 2 MISPERCEPTION

*"This Year's Income With Last Year's Prices"*

The previous activity in which individuals only measured their change in purchasing power during a given year, is also the basis for another popular misperception about inflation. How often have you heard someone say, or indeed thought it yourself, "I would be so much better off if only I had this year's income with last year's prices." As attractive as this may sound, for the average individual in the economy, this is impossible.

Anyone believing this to be possible does not understand the difference between measuring income in nominal or money terms and measuring income in real terms, in units of real output or goods. In activity 4 of the last section, the rate of interest could be measured in terms of dollars or in terms of records. For instance, a 5% rate of interest on the $100 in that activity could be either expressed as $5.00 which is nominal or 1 record which is in real terms.

In the economy, it is the real values that are ultimately important. Most people think about their income in terms of money but what is really important is how much real output, goods and services, that money income will purchase. This is referred to as real income or the purchasing power of income. If real output in the economy increased by 3%, then the total purchasing power of income or real income can only increase by 3%.

The change in the purchasing power of income, which is defined as the total amount of real output that total money income is able to buy, cannot be any more or less than the change in total real output, because when it comes right down to it, they are exactly the same thing. If everyone in the economy experiences a 15% increase in his dollar value of income, they expect to be able to buy 15% more output. But if the economy has produced only 3% more, obviously, there is a large divergence between how much people want to buy and what is actually available. They cannot purchase what does not exist. It is the increase in prices that reduces individual's purchasing power of income down to the level at which he can only buy the additional output produced. If the money value of income had increased by only 3%, then prices would not have had to increase to ensure the purchasing power of people's incomes increased by exactly the same amount as real output. A 15% increase in the money value of income can only be translated into a 15% increase in real income if the economy is able to produce 15% more additional output.

So if you received a 15% increase in money income this year and prices increased by 12%, reducing your purchasing power of this income to 3%, this is because the economy only produced 3% more real output this year. It is impossible for the "average citizen" to have this year's income with its 15% increase along with last year's prices.

2 MISPERCEPTION

## 4 *Activity*

Consider the following three cases when the real levels of output increased by 10%. Fill in the following table and answer the accompanying questions.

| 1<br>Total Real Output in Units | 2<br>Money Value of Total Income Spent | 3<br>Price per Unit (2) ÷ (1) | 4<br>Real Income (2) ÷ (3) | 5<br>% Δ in Real Output | 6<br>% Δ in Money Income $\frac{\text{2-\$100}}{\text{\$100}} \times 100$ | 7<br>% Δ in Prices $\frac{\text{3-\$1.00}}{\text{\$1.00}}$ |
|---|---|---|---|---|---|---|
| 100 | $100 | 1.00 | 100 | — | — | — |
| Case 1<br>110 | $100 | ≈ .908 | | 10% | | |
| Case 2<br>110 | $110 | 1.00 | | 10% | | |
| Case 3<br>110 | $200 | ≈ 1.82 | | 10% | | |

a) What happened to prices when income did not increase when real output increased by 10%?
What did purchasing power equal?

b) What happened to prices when income increased by 10% when the real output increased by 10%?
What did purchasing power equal?

c) What happened to prices when income increased by more than 10% when real output increased by 10%?
What did purchasing power equal?

d) In each case when real output increased by 10% what was the percentage increase in purchasing power?
To calculate this, use the formula:

$$\frac{\text{Column (4) - 100}}{100} \times 100$$

ACTIVITY ANSWERS

## *Activity 3*

| | (Col. 3) | (Col. 4) | (Col. 5) |
|---|---|---|---|
| Jan. 1975 | $100 | | — |
| Dec. 1975 | $ 90 | $10 (-) ↓ | |
| Jan. 1976 | 181 | | |
| Dec. 1976 | 165 | $15.7 (-) ↓ | 181-100 81 ↑ |
| Jan. 1977 | 248 | | |
| Dec. 1977 | 226 | $22. (-) ↓ | 67 ↑ |

## *Activity 4*

| | (Col. 4) | (Col. 6) | (Col. 7) |
|---|---|---|---|
| Case 1 | 110 | 0 | -10% ↓ |
| Case 2 | 110 | 10% | 0 |
| Case 3 | 110 | 100% | 82% ↑ |